REMARKS

Claims 39 - 66 are pending. Claims 1- 38 have been cancelled. Claims 39 – 66 have been added. No new matter has been introduced. Reexamination and reconsideration of the application are respectfully requested.

In the November 24, 2003 Office Action, the Examiner rejected claims 1 - 5, 7, 9, 11, 12, 15, 21, 31 - 35, 37 and 38 under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 5,742,521 to Ellenby et al. (the Ellenby reference) in view of U.S. Published Patent Application No. 20020059205 to Graham et al. (the Graham reference). The Examiner rejected at least claim 1 as being unpatentable under 35 U.S.C. § 112, second paragraph because the Examiner was not clear what was meant by the phrase :"all the statistical information." The Examiner does not cite specific claims in the 35 U.S.C. § 112, second paragraph rejection, but applicant assumes that claims 1, 11, 23, and 23 were rejected. The Examiner rejected claims 13, 16 - 19, 23 - 26, 28, and 30 under 35 U.S.C. § 103(a) as being unpatentable over the Ellenby reference in view of the Graham reference, and further in view of U.S. Published Patent Application No. 2002/0112237 to Kelts (the Kelts reference). These rejections are respectfully traversed.

The independent claims corresponding to cancelled claims 1, 11, 23, and 31 have been rewritten to eliminate the phrase "all the statistical information." Accordingly, applicant respectfully submits that claims 1, 11, 23, and 31 overcome the 35 U.S.C. § 112, second paragraph rejection.

Embodiments of the present invention are directed to an automatic statistics generation and management system. A head-end system receives input data of a

game and generates semantic information and geometric information based on the input data. The head end system includes a tracking system (which receives and processes the information to generate tracking information) and a production system (which receives the tracking information and generates the event model, i.e., semantic, and the animation model, i.e., geometric, information. The production system utilizes algorithms to automatically detect and add events and actions to the event model information and the animation model information based on the tracking information provided by the tracking system. The event model information preferably contains higher-level semantic information describing events that occur during the game, e.g., committed foul, player kicking a ball, etc. A statistics generation system receives the event model information and the animation model information from the head-end system and generates the sporting statistics. A statistics management system receives and stores the generated sporting statistics and is also adapted to analyze the sporting statistics.

Claim 39 recites:

A method of automatic statistics generation and management, comprising:

receiving video input data of a game;

generating tracking information by tracking elements, including a player and a ball, in the video input data throughout a course of the game; and

generating in real-time semantic information based on the tracking information, **without input from an operator, utilizing software**

applications which include rules and determine from the tracking

information sporting statistics that are to be recorded for the game,

wherein the semantic information describes actions during the

game that lead to consequences which are semantically significant in the

game.

Applicant respectfully submits that there is no motivation to combine the Ellenby

and Graham references. The Examiner states that the motivation to combine the

Ellenby and Graham references is to enable the "automatic[ally] scheduling a large

sporting event and keeping track of all the scheduling rules for a sport facility."

(*November 24, 2004 Office Action, page 4*). Applicant respectfully submits that it would

not have been obvious to one skilled in the art to adapt the Ellenby teachings with the

Graham teachings. The mere fact that a reference may be modified in the direction of

the claimed invention does not make the modification obvious unless the reference

expressly or implicitly teaches or suggests the desirability of the modification. In re

Kotzab, 55 U.S.P.Q.2d 1313, 1317 – 1318 (Fed. Cir. 2000); In re Fitch, 23 U.S.P.Q.2d

1780, 1783 (Fed. Cir. 1992); In re Mills, 16 U.S.P.Q.2d 1430, 1432 (Fed. Cir. 1990).

The Ellenby reference is primarily directed to a new and improved system

for a fan to view a sporting event. The Graham reference is directed to a system

that a manager of a sporting event or facility could use in scheduling and

managing the event or facility. The Ellenby and Graham references are both directed

to sports-related topics but a system for a fan to view an event is completely different

from a system an operator can use to schedule events at a facility.

In this case, the Ellenby and Graham references do not expressly or implicitly

teach the desirability of the modification. The Graham reference does not suggest, implicitly or explicitly, the desirability of generating sporting statistics based on the video input data without input from an operator utilizing software applications because the Graham reference is only scheduling teams and facilities. Likewise, the Ellenby reference does not suggest, implicitly or explicitly, the desirability of having a system that assists the manager of a sporting event or sporting facility in scheduling or managing an event or facility because the Ellenby reference is directed to providing a better viewing environment for spectators, not managers of a sporting event or sporting facility. Accordingly, applicant respectfully submits that there is no motivation or suggestion to combine the Ellenby and Graham references.

Assuming, *arguendo*, that the Ellenby and Graham references could be combined, the Ellenby and Graham references still do not meet the limitations of independent claim 39.

The Ellenby reference is directed to a new and improved system for viewing of a sporting event. The vision system includes the ability to merge an image of a real scene with a computer generated image to create a composite image of the real scene and computer-generated scene. A camera is used to form an electronic image of a particular scene of interest. A computer can be utilized, along with image processing routines, to manipulate the image before it is presented. Information that can be merged on the image of a real scene includes historic, statistical, symbolic, abstract symbolic, action tracks, etc. *(Ellenby reference, Col. 1, line 43 - col. 2, line 14)*.

The Ellenby reference includes an Action Data System that tracks and identifies the location of each Action Data Element (e.g., players, umpires, coaches, umpires)

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and broadcasts the information in real-time to the vision system, i.e., the Brighteyes system. The Action Data System includes high speed color video cameras, frame grabbers, a two-way digital radio, a keyboard, a color screen, and a light-pen to allow an operator to rapidly select items on the screen. Each frame grabber enables the computer processor in the Action Data System to use stop frame action to track the location of each Action Data Element in view. As each Action Data Element enters the field of play, it is identified with a unique identifier by checking off a pre-arranged list or roster or by an operator designating an Action Data Element utilizing the light-pen and keystrokes. The ball is also designated in a similar way. Using the unique identifier, the Action Data System 46 has access to data relating to each player to allow the · image processing software in the Action Data System to better analyze the stop-frame images. This may also enable the operator to resolve difficulties in machine recognition of the play. Such information could include color of uniforms, height of player, left- or right handed of player.

The Action Data System, after determining the position of each Action Data Element, transmits this information over the digital radio to the Brighteyes units. The Action Data System 46 also transmits results of the previous play as it relates to statistics. Each piece of information is tagged with a personal ID number. The information is transmitted to a Transaction Data System 48 which updates the database with new information. *(Ellenby reference, Col. 7, line 28 - col. 8, line 40).*

The Ellenby reference does not disclose, teach, or suggest the method of independent claim 39. Unlike the method of independent claim 39, the Ellenby reference does not concern a method including receiving video input data of a game;

generating tracking information by tracking elements, including a player and a ball, in

the video input data throughout a course of the game; and generating in real-time

semantic information based on the tracking information, without input from an operator,

utilizing software applications which include rules and determine from the

tracking information sporting statistics that are to be recorded for the game,

wherein the semantic information describes actions during the game that lead to

consequences which are semantically significant in the game.

The Examiner acknowledges that the Ellenby reference does not disclose

"utilizing software applications which include rules and determine from tracking

information all the statistical information that is to be recorded for the sporting event.

(November 24, 2003 Office Action, page 3). Accordingly, applicant respectfully submits

that claim 39 distinguishes over the Ellenby reference.

The Graham reference does not make up for the deficiencies of the Ellenby

reference. The Graham reference is directed to a system for assisting a manager of

the sporting event or sporting facility in scheduling or managing the event of the facility.

The invention further provides a method of accessing the scheduling computer

worldwide and for easy dissemination and immediate updates for the participants in the

sporting event. The computer system of the present invention allows managers of he

sports leagues to book time from the sports facility, set up league play based on the

scheduling rules, and quickly create a schedule for each participant. *(Graham*

reference, paragraphs 0011 and 0012).

The Graham reference does not disclose, teach, or suggest the method of claim

39. The Graham reference does not concern a method including receiving video input

data of a game; generating tracking information by tracking elements, including a player and a ball, in the video input data throughout a course of the game; and generating in real-time semantic information based on the tracking information, without input from an operator, **utilizing software applications which include rules and determine from the tracking information sporting statistics that are to be recorded for the game**, wherein the semantic information describes actions during the game that lead to consequences which are semantically significant in the game.

Instead, the Graham reference determines schedules and matches for teams involved in a sporting event. Input parameters 200 (such as start date, end date, days of the week) are used by the rules 202 of the invention's computer system to create a schedule 204. The rules are the method for selecting the appropriate matches of teams against each other. The set of rules to apply to the generation of each schedule may be different, and may be set by the league manager or facility owner based on their particular situation. *(Graham reference, paragraphs [[0054 - 0055]].* This is not the same as a method including **utilizing software applications which include rules and determine from the tracking information sporting statistics that are to be recorded for the game.**

It is not the same because the Graham reference's rules are utilized to select matches to be played in a sporting event and are not utilized to determine statistics from tracking information. Further, the Graham reference's tracking information refers to the keeping track of all the scheduling of the sports facility, which is not the same as tracking information including tracking elements including a player and a ball in the video input data throughout a course of the game, as recited in independent claim 39.

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The Graham reference's tracking information is not involved in any action of the course of the game, instead it is focused on scheduling the game. Accordingly, applicant respectfully submits that claim 39 distinguishes over the Ellenby and Graham references, alone or in combination.

Claim 39 further distinguishes over the Ellenby and Graham references. The Ellenby reference does not concern a method including receiving video input data of a game; generating tracking information by tracking elements, including a player and a ball, in the video input data throughout a course of the game; and generating in real-time semantic information based on the tracking information, without input from an operator, utilizing software applications which include rules and determine from the tracking information sporting statistics that are to be recorded for the game, **wherein the semantic information describes actions during the game that lead to consequences which are semantically significant in the game**.

The Examiner does not point to the Ellenby reference as disclosing that the semantic information includes event model information that describes game-type rule events that occur during a game, instead relying on the Graham reference. *(November 24 Office Action, page 4)*. The new limitation, **wherein the semantic information describes actions during the game that lead to consequences which are semantically significant in the game,** has a similar meaning to the previous limitation because both limitations are directed to the semantic information including semantically important events. Because the new limitation has a similar meaning to the previous limitation, applicant respectfully submits that the Ellenby reference does not disclose the above-identified limitation.

The Graham reference does not make up for the deficiencies of the Ellenby reference. The Examiner states that paragraph 0055 of the Graham reference discloses "the semantic information includes event model information that describes game-rule type events that occur during a game." *(November 24 Office Action, page 4)*.

Applicants respectfully submit that the Graham reference does not disclose the new limitation of **the semantic information including actions during a game that lead to consequences which are semantically significant in the game**. In contrast, the Graham reference discloses schedule-rule type events. For example, the rules could include that teams should play each other a certain amount of times, that teams should play each time slot equally, and teams should play each venue equally. The Graham rules do not describe actions that occur **during a game** that lead to consequences which are semantically significant. Semantically significant events include events like a player completing a corner kick, committing a foul, or obtaining an interception in football. Instead, the Graham reference is directed to events that occur before the game is played, i.e., creating a schedule of matches and use of facilities. Accordingly, applicant respectfully submits that claim 39 further distinguishes over the Graham reference, alone or in combination with the Ellenby reference

In addition, Applicant submits that independent claim 39 further distinguishes over the Ellenby and Graham references. The Examiner identifies that col. 10, lines 31 - 47 of the Ellenby reference meets the limitation of generating in real-time semantic information [and geometric information] based on the video input data, **without input from an operator**. *(November 24 Office Action, page 3)*. Applicant asserts that col.

10, lines 31 - 47 of the Ellenby reference teaches the replaying of data from previous plays utilizing stick figures and or computer-generated animation of the players in action. This is not the same as **generation of real-time semantic information based on the video input data <u>without input from an operator</u>** because replaying of data from previous plays utilizing animation or stick figures does not involve real-time generation of semantic. Semantic information includes actions or interactions that are semantically significant, e.g., a corner kick in soccer or an interception in football, and geometric information includes data identifying movement, direction, and speed. The Ellenby reference discloses utilizing past information to create animation sequences. It is not creating information on interactions that are semantically significant, it is just disclosing generating fictional characters, i.e., stick figures or animation, based on the past data.

Further, the Ellenby reference discloses that an operator is integrally involved in the generating the geometric information of the play. Specifically, the operator selects an Action Data Element by checking off a pre-arranged list or roster or by an operator designating a player, umpire, or manager by a light-pen and by assigning a unique identifier, utilizing keystrokes. *(Ellenby, Col. 7, lines 59 - 65)*. In addition, the operator also is required to designate the general area where the ball would first appear from the pitcher's hand so that the image processing software may commence tracking the ball. *(Ellenby, Col. 8, lines 3 - 10)*. This is not the same as a method of automatic statistics generation and management including **generating in real-time semantic information and based on tracking information <u>without input from an operator</u>**. The Ellenby reference <u>requires input from an operator to designate the players or check a pre-</u>

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arranged list and also to designate the general area where the ball would first appear. Accordingly, applicant respectfully submits that claim 39 distinguishes over the Ellenby reference.

The Graham reference does not make up for the deficiencies of the Ellenby reference. The Graham reference does not concern a method of automatic statistics generation and management including **generating in real-time semantic information based on tracking without input from an operator**. First, the Graham reference does not disclose receiving video input data of a sporting event because the Graham reference is directed scheduling events and coordinating the schedule at a facility. Further, the Graham reference cannot generate semantic information based on the video input data without input from an operator because it does not receive any video input data. Also, the Graham reference does not disclose the generation of real-time semantic information because it is not directed to actions that are semantically significant, such as scoring a goal or committing a foul. The Graham reference is also not directed to capturing movements, speed, or direction because it is disclosing the scheduling of games and what facilities are to be utilized. Accordingly, applicant respectfully submits that independent claim 39 further distinguishes over the Ellenby and Graham references, alone or in combination

The Kelts reference does not make up for the deficiencies of the Ellenby and Graham references. The Examiner utilizes the Kelts reference to show a gateway connected to the statistics management system to support query applications from a user interface. *(November 24 Office Action, page 6)*. The Examiner also states that the Kelts reference discloses a data miner to extract and analyze sporting statistics

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stored in the statistics database. *(November 24 Office Action, page 7)*. In addition, the Examiner cites that the Kelts reference discloses that sporting statistics are saved in a predefined Extended Markup Language (XML). *(November 24 Office Action, page 7)*. The applicant acknowledges that the Kelts reference discloses a gateway server configured to receive requests from a PDA and to communicate the requests to appropriate web servers via the Internet. The applicant also acknowledges that the Kelts reference utilizes a data miner configured to extract, format, and otherwise process data associated with the use of display system. In addition, the applicant acknowledges that the Kelts reference discloses the storing of XML map data and a plurality of images in an image repository.

However, the Kelts reference does not disclose, teach or suggest a method including receiving video input data of a game; generating tracking information by tracking elements, including a player and a ball, in the video input data throughout a course of the game; and generating in real-time semantic information based on the tracking information, **without input from an operator, utilizing software applications which include rules and determine from the tracking information sporting statistics that are to be recorded for the game, wherein the semantic information describes actions during the game that lead to consequences which are semantically significant in the game.**

Instead, the Kelts reference is directed to the generation of a navigation map that organizes a plurality of information sources in an easy manner. *(Kelts, Abstract)*. The Klets reference provides users with the ability to view, search, and locate a plurality of graphical symbols corresponding to different content files, sources, data, information,

web pages, active links, etc. *(Kelts, page 3, paragraph [0047])*. This is not the same as generating semantic information based on tracking information because the Kelts reference is focused on displaying information and **not generating it based on video input data**. Further, the Kelts reference does not disclose **utilizing software applications which include rules and determine from tracking information sporting statistics that are to be recorded for the game**. The Kelts reference is not found to disclose or discuss tracking elements in the video input data throughout a game or having software applications that include rules. The Kelts reference is also not found to disclose or discuss that any of its software application **includes semantic information describes actions during the game that lead to consequences which are semantically significant in the game**. Accordingly, applicant respectfully submits that claim 39 distinguishes over the Kelts reference, alone or in combination with the Ellenby and the Graham references.

Independent claims 46, 55, and 62 recite similar limitations to independent claim 39. Accordingly, applicant respectfully submits that independent claims 46, 55, and 62, distinguish over the Ellenby, Graham, and Kelts references, alone or in combination, for similar reasons as discussed above in regard to independent claim 39.
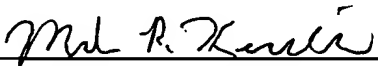
Dependent claims 40 - 45, 47 – 54, 56 – 61 and 63 - 66 depend, indirectly or directly, on independent claims 39, 46, 55, and 62. Accordingly, applicant respectfully submits that claims 40 – 45, 47 – 54, 56 – 61, and 63 - 66 distinguish over the Ellenby, Graham and Kelts references, alone or in combination, for the same reasons as discussed above in regard to independent claims 39, 46, 55, and 62.

Applicant believes that the claims are in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.
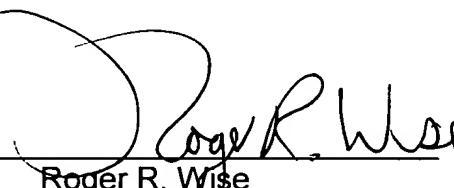
Respectfully submitted,

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